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JAPANESE PATENT OFFICE

PATENT ABSTRACTS OF JAPAN

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Eing.: 24. APR. 2003		
PA. Dr. Peter Riebling		
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(21) Application number: **11311933**(22) Date of filing: **02.11.99**(71) Applicant: **SEIKO INSTRUMENTS INC**

(72) Inventor: **OKI SHIGERU**
YAMAMOTO TETSUO

(54) **METHOD OF ASSEMBLING SHAFT WITH
 FLANGE AND FLUID DYNAMIC PRESSURE
 BEARING**

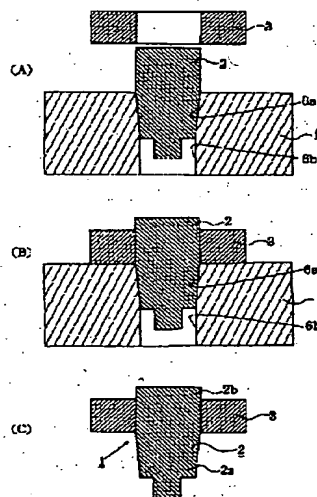
(57) Abstract:

PROBLEM TO BE SOLVED: To assemble a shaft with flange by press fitting a ring member into a cylindrical member with accurate perpendicularity, to improve stability in high-speed rotation of a fluid dynamic pressure bearing basically composed of the shaft with flange and a sleeve receiving the same, and to realize the long service life.

SOLUTION: This method of assembling a shaft 1 with flange comprises (A) a stage for inserting and setting a cylindrical member 2, having a cylindrical part 2b and a tapered cylindrical part 2a of a very small inclination angle having a diameter reduced continuously from the cylindrical part 2b to one end part, into a guide jig 6 having a tapered cylindrical part 6a of very small inclination angle same as that of the tapered cylindrical part 2a, and (B) a stage for press fitting a ring member 3 to the cylindrical member 2 to a prescribed position of the

cylindrical part 2b. Finally, the guide jig 6 is taken out of the cylindrical member 2 to complete the assembling of the shaft 1 with a flange.

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(21) Application number: **11123056**(22) Date of filing: **28.04.99**(71) Applicant: **SANKYO SEIKI MFG CO LTD**

(72) Inventor:
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YAZAWA TAKEHIKO

(54) SPINDLE MOTOR

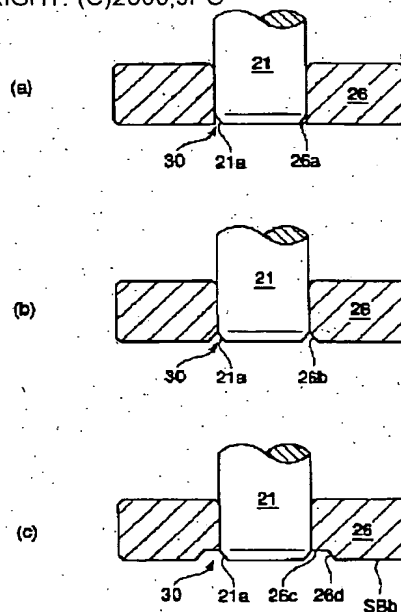
(57) Abstract:

PROBLEM TO BE SOLVED: To raise the junction strength between the fellow parts relatively short in junction length while thinning a motor, by providing the surface part of a junction boundary with an escape part sunken in axial direction, and welding a bearing sleeve and a counter plate in this escape part thereby uniting both.

SOLUTION: After press-fitting or insertion of a rotary shaft 21 and a thrust plate 26 on a level that the deterioration of squareness does not occur, the junction boundary between both is welded from the side of surface. At this time, an escape part 30 sunken in axial direction is made in circular form in advance at the surface part of the junction boundary, and in this escape part, the rotary shaft 21 and the thrust plate 26 are welded. For the form of the escape part 30 at the junction boundary between the rotary shaft 21 and the thrust plate 26, a tapered face 21a is made all around the peripheral fringe on tip side of the rotary shaft 21, while the

inside peripheral face 26a of the center hole of the thrust plate 26 adjoins the tapered face 21a.

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(21) Application number: 11121652

(71) Applicant: KOYO SEIKO CO LTD

(22) Date of filing: 28.04.99

(72) Inventor: FUJII YOSHIKI

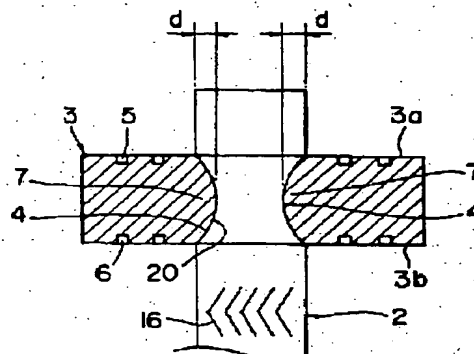
(54) DYNAMIC PRESSURE BEARING

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(57) Abstract:

PROBLEM TO BE SOLVED: To provide a dynamic pressure bearing having a shaft, to which a flange can be firmly secured with ease.

SOLUTION: The outer peripheral faces of a shaft 2 are respectively provided with annular grooves 4, each of which is shaped like an arc in section and has the same size of width as the thickness of a flange 3. When dynamic pressure generating grooves 5, 6 are respectively formed on end faces 3a, 3b of the flange 3 with the use of dies, the inner peripheral faces of the flange 3 expand and respectively bite into the annular grooves 4, each of which is shaped like an arc in section, and each of the inner peripheral faces of the flange 3 and the each of the sectionally-arclike annular grooves 4 press against each other over the entire width in the direction of the thickness of the flange 3 and engage with each other.



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